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1860.

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Singer's Patent.

SACRAL
PRINT

WHEELER WILSON'S
GROVER BAKER'S
LANCASHIRE
THE BRITISH

THOMAS
NEWTON WILSON'S
FORWELL'S
SINGERS

BY CHARLES GOLF

FIRST EDITION

LONDON

THE
SEWING MACHINE,
AND
ITS CAPABILITIES:

WITH
INSTRUCTIONS FOR ITS USE

AS APPLICABLE FOR
BOOTMAKERS, TAILORS, SHIRT AND COLLAR MAKERS,
CAP MAKERS, UMBRELLA & PARASOL MAKERS,
AND OTHERS WORKING SEWING MACHINES;

WITH DIRECTIONS FOR WORKING

THOMAS'S
NEWTON WILSON'S
FOXWELL'S
SINGERS'

WHEELER WILSON'S
GROVER BAKER'S
LANCASHIRE
THE BRITISH

BY CHARLES COLE.

FIRST EDITION.

LONDON:

PUBLISHED BY THE AUTHOR, 18, BARBICAN. E.C.
PRINTED BY JAMES & Co., 39 & 40, ALDERMANBURY,
1860.



PREFACE.

A word to my readers, at the commencement of this little work, will put them in possession of my motives for publishing this book, which must of necessity interest only a certain portion of the public. A very great deal of mystery has hitherto been attached to the Sewing Machine; they are objects of curiosity in the street; to work one in a shop where it may be seen from the window is to attract the notice of numerous mechanical sceptics, who stand by the hour flattening their noses against the panes in the vain hope of discovering the hidden agency which produces the mysterious stitch, and many of the countenances are redolent with the most extreme disgust at the happy working of the small toy that has, in their opinion, destroyed needle work. I can confidently state, from experience, that not more than one half of the persons working these machines know how the stitch is made; they have a confused notion about an under-thread, a shuttle, a hook, or a needle, and they know that when the machine is in proper order it produces good work, and *vice versa*, and that is the extent of their knowledge. Now a little plain information enables this class to under-

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stand the working of the machine, and the remedies quickly suggest themselves.

There is a class that has been driven out of the usual course, by the introduction of this machine into manufactures they are engaged upon—the time arrives when they must succumb and employ machinery—and these persons are naturally desirous of possessing as much information upon the new subject as they can obtain. By the explanations of the processes to which different classes of work are subjected, this information is supplied, and the knowledge that would require months of experience to acquire is here clearly laid down for the instruction of the beginner.

My connection, in making so many different descriptions of goods by the Sewing Machine, has given me the advantage of attaining the knowledge of the processes to which almost every description of work manufactured by the machine is submitted. These processes I attempt to lay before the reader as clearly and concisely as possible.

Another class are desirous of purchasing these machines for the purpose of working for city houses that give their work out. To this class I endeavour to render information as to the description of machine most appropriate and best suited to that kind of manufacture on which it is employed, or on which it is intended to employ it; the material best adapted for the different processes, and directions for remedying any simple defects that may arise in the machine. I think I may venture to say this will prove eminently useful to the manufacturer commencing the Sewing Machine.

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Another portion of the public whose information I write for, is that part of the female community desirous of obtaining a decent livelihood by their own exertions. To those persons is pointed out a field for their exertions sufficiently extensive and remunerative to obtain them a constant and respectable living. My remarks will also tend to soften down the libel the manufacturers lie under, in some cases, as to the "starving wages paid to workwomen." In all parts of the Sewing Machine process, females are enabled to earn wages contrasting favourably with the wages earned by men employed upon unskilled labour. The manufacturers are frequently libelled through unfortunately having in their service persons of limited capacity, whose wages, consequently, are low, and at this their friends are surprised and disgusted. I have known frequently a girl to work a Sewing Machine for two years earning ten shillings per week, piece work; I have removed her and have placed at the same machine, in her stead, a hand who has not had two months' experience, but who, at the same machine, on the same quality of work paid at the same rate, would realize from eighteen to twenty-five shillings per week. Manufacturers will substantiate this: it is one of the greatest anomalies to examine a wage book at a factory, where all are paid piece work at the same prices and yet to see the difference of their earnings. This state of things holds out a premium to steady intelligent workers, and there is a large field for them. The Sewing Machine is but in its infancy; there is at the present time a greater demand for first-rate hands than ever, and this

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demand is likely to increase rather than decrease for some time to come.

In this, the first edition, I must throw myself upon the charity of my readers; several little errors have unavoidably crept into this little work, which is owing in some measure to its technical character; but, should this work be deemed of sufficient interest to enable me to produce another edition these little errors shall be corrected, and any necessary improvements made. The subjoined errata will prevent the reader being mislead by the mistakes alluded to.

ERRATA.

- In page 13—For “form a loop,” read “not form a loop.”
„ 20—line 27—For “even.” read “run.”
„ 28— „ 27—For “stitched,” read “stretched.”
„ 36— „ 14—For “claw,” read “clam.”
„ 36—last line—For “all parts with the exception.”
read “all parts including.”

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THE SEWING MACHINE

AND ITS CAPABILITIES.

Sewing Machines have now been substantially and fairly put to the test; not long since they were a myth. Nobody believed in them; those that did, persistently persevered in the fallacy that "if one stitch went, all went," until it has now been fairly demonstrated, except to a few of the prejudiced, that Sewing Machine work is in every way equal to hand labour.

In point of regularity and beauty of workmanship, the work of the Sewing Machine is decidedly superior to hand work; while, if the machine be worked properly by persons understanding it, it is in no way inferior in strength.

To give a description and history of all the Sewing Machines invented would be tedious and uninteresting to the general reader seeking for information respecting the machines in present use. Not one tenth of the machines registered or patented have been worked, and, the probability is, they never will be worked. A description of obsolete machines I imagine would be of very little use, except to guard the inventive mechanic against obstructions upon which others have spent

time and money. This is not my object, my aim being to explain the machines in use, their capabilities, and how to use them. This I shall attempt to do in as brief a manner as possible, compatible with giving clear directions which may be understood by all beginners seeking for information.

The machines generally adopted and most in use in England are those of Thomas, Wheeler Wilson, Newton Wilson, Singher, Grover Baker, Foxwell, Judkins, and the British. Upon these eight machines I purpose giving instruction, with directions for their use, believing them to be the principal and generally adopted for manufacturing purposes.

The infantile existence of the Sewing Machine has not been a "happy childhood," but, as it advanced in years, it developed its strength. It has had to contend with law suits, strikes, prejudice and other enemies, which either swallowed its profits or aimed at its destruction. The Northampton bootmakers turned out against it, to the great detriment of that manufacturing district, as the trade has in some measure been removed to less insubordinate localities. Numerous strikes in the tailoring trade have attended its progress: it has met obstacles at every point of its career, until it has at length established itself a great fact!

Those persons who oppose machinery simply because it is machinery, I will not appeal to, as it is useless attempting to argue with persons who do not care to look below the surface of things. Inventions of the most valuable and now indispensable descriptions were at first regarded as chimerical in attainment, and as ruinous and derogatory to the artizan.

How, then, can the Sewing Machine expect to escape the opprobrium of this class, as one of its principal uses is to supersede hand labour.

But it is not true that the working population suffer by the introduction of machinery. Some few may feel it for a time, but when it finds its level the masses are benefited, and I doubt if, ultimately, any are thrown out of employment by it.

Let us compare the wages earned by that class of operatives affected by this invention—ten years ago, when the Sewing Machine was little used, with the present time, when it is widely spread. The Americans were some years in advance of us. Amongst the first trades that adopted the machine in this country was the shirt and collar business. Let us notice the prices paid for making these articles in 1850. As regards the shirt trade, it was a “sure point” with eloquent magistrates to descant upon the paltry pittance eked out to the poor shirt maker, whenever one of that class happened, as was frequently the case, to pawn or otherwise appropriate the property of her employer, and to make a willing appearance before a city Solon, who, in all probability, amid the applause of the court, would reward her from the poor box and discharge her, and, quoting Thomas Hood, comment severely upon the cruelty of her employers.

This might do for the city magistrates, but it neither suited or paid the manufacturers, who protested against being denounced as oppressors, and became the heroes of Catnatchian ballads, bawled vociferously by a pair of stentors opposite

their warehouse doors. I met with an instance of this kind myself. The shirt maker's case was bad enough in all aspects, but the real remedy was with the public themselves. It is putting forth no novelty to assert that the public purchase where they can purchase cheapest; and the most charitable refuse to give Jones 6/6 for an article they can purchase of Brown for 5/: notwithstanding the benevolent Jones assures his customers (should he have any) that he pays his work-people 25 per cent. more than Brown! he is regarded either as a fool or a rogue. Is it likely he would pay more than other makers? No, he wants 50 per cent. profit, and the buyer will go to the cheapest market. This is the argument used by the public, and this is the reason shirt work was paid so badly. But the manufacturers found a remedy; they discovered that they were paying 30 per cent. more for their work than was paid in Ireland, where food, living and labour were much cheaper, and where the work produced was 300 per cent. better! The Sewing Machine stepped in, and the work could again be done in England. The slop shirt hands that earned from five to eight shillings per week, found a better and more remunerative field for their labour. Did the introduction of the Sewing Machine lessen these low wages? No, it doubled and in some cases trebled them! There are many hands, at various city houses, at the present time earning from ten to fifteen shillings per week by preparing work for the machine; and there is a large proportion of machine hands that can earn from fifteen shillings to twenty shillings per week. Have not this class of workpeople

benefited by the introduction of machinery? Of course they have, and largely too. I feel no hesitation in saying, that by this class of work being manufactured by the machine, the operatives have gained a greater advantage than either manufacturers or shopkeepers.

But, say our opponents, "a Machine averages from six to seven hundred stitches per minute—what a vast amount of work they must turn out—therefore, it may benefit a few, but the majority of sempstresses must of necessity be thrown out of employment." This is a mistake. Let any of my readers search for a shirt collar worn ten years ago, and compare it with one of modern make, and observe the difference in the amount of work. The collar in present use contains more than four times the amount of work than the collar worn ten years ago. Taking this into consideration, with the increase of the home trade, and the supplying of growing demands in the colonies, it gives employment to as great a number of hands as ever.

It is a fact well known to every collar manufacturer, that, taking into account the work he has to put into this class of goods, compared with that which he put in formerly, collars cost almost as much making by machine as by hand labour. The advantage derived from the machine is, that it supplies an article better and more sightly, with four times the amount of work in it and at the same price as that formerly supplied by hand. In addition to this, the manufacturer is enabled to turn out special orders or accommodate shippers with greater facility than under the old system.

The same argument applies to the boot and shoe trade. This trade has offered more opposition to the Sewing Machine than any other trade in England; yet there are few businesses to which the Sewing Machine is more applicable. For binding, as regards appearance and strength, the Sewing Machine is vastly superior to the slight work the binders put in by hand. Take the women's cheap Balmorals as an example; they are sightly, and for regularity, precision, and, I maintain, for strength also, are unequalled by hand work, which was badly paid and done accordingly. I expect at this stage to meet with denial, so far as strength is implied. If material of sufficient strength be used in the stitching, any inferiority could only be attributed to the ignorance or inexperience of the worker. If a shuttle machine be used, let such a tension be placed upon the thread, either by loosening the shuttle or tightening the top thread, as will cause the stitching on the reverse of the work to be a *fac simile* of the front stitch. If a machine be used which forms a chain stitch on the reverse, let the top thread be tightened until the chain lies flat upon the substance stitched, that is to say, leaves no burr or ridge at the back. By attending to these simple arrangements, Sewing Machine work can be made any reasonable strength. Leather being a soft, tough and pliable substance, is peculiarly adapted for shewing the stitch of the Sewing Machine to advantage: upon no other work will it shew up so beautifully: some of the specimens of closing and binding shown by Messrs. Thomas are really unsurpassed by the most skilled hand labour.

Silk is about the best and strongest description of material used for this work. Barber's Twist is undoubtedly the strongest material, but its peculiar harshness renders it unsuited for the shuttle machine, being liable to twist and form a loop when slackened, thus rendering it liable to miss or slip stitch. There are also some very beautiful specimens of threads now being manufactured solely for the Sewing Machines; ordinary threads are rendered unsuitable by the knotty protuberances frequently found in them; for in the machine the whole of a reel of thread passes through the eye of the needle, but the worker, using a thread at a time, can reject the irregular parts.

Binding may be done easily without basting, tacking, or fixing, by means of apparatus made for that purpose to fix on the machine. One of the simplest and best among many ingenious contrivances is one patented by John Felton, City Garden Row, City Road: its simplicity and exactness in executing its work proves it to be the best and most practical apparatus for this purpose extant; while the cheap price it is sold at renders it an inexpensive experiment. Before closing these few remarks upon boot and shoe making I will attempt, for the instruction of the beginner, an explanation of the process by which boot making is generally done by machine.

I will suppose the operator engaged upon making a pair of women's cloth or Cashmere boots, side laced: my object in this explanation is to enable the young beginner to turn out work at once, without the trouble and expense of experimentalizing this way or that way, before getting it suitable

both for strength and appearance and ready for sale. Choose a strong thread not too stout, and use a thin needle, just sufficiently large to carry the thread, for running the cloth—a needle too thick would leave the perforation so large that the cloth might be torn, as we divide postage stamps: be particularly careful of this if the material is Cashmere, which is very likely to divide in this way if a large sized needle be used. Let the tension be moderate, not too tight upon the cloth, as elasticity is required in the front seam, and too tight a tension would not give to the instep, but would crack the stitches. When the operator has run the front and back seams, let him divide the seams with the nail equally, or, if too stout a cloth, with a warm iron; then stitch the cloth, taking care the needle goes through the half seam scraped back, which gives strength and solidity to the stitch, and secures the necessary object of retaining the same in its place: this effected, put on the binding, keeping the stitch well on the edge of the binding that it may have a firm hold. This done have the vamps and tongue basted on, and then stitched as you may require: this should be done with stouter thread and a leather pointed needle, which leaves the perforations much more harmless, although you should be careful not to use a finer stitch than the work necessarily demands, as the finer the stitch the weaker the material operated upon. Remove the basting threads and the uppers are complete, with the exception of holeing, which cannot as yet be accomplished by machinery; although I have no doubt that this and other difficulties will eventually be overcome.

The same operation performed with Balmorals is also suitable for this class of goods, with the exception of using a leather pointed needle for the whole operation.

For men's lace-up a heavier description of machine is generally used, and the work is necessarily sewn with stronger material. The same process holds good with this description of work as with that already described, with the exception of the seam up the front. This description of goods should always be done with a tension, that produces work alike on both sides of the material if done by a shuttle machine; by this means the work produced is much stronger than when the under thread lies straight on the reverse of the material.

For closing Wellingtons or stitching the backs of other descriptions of work Messrs. Thomas and Co's double action machine is the most convenient: in this machine the work passes upwards towards the wheel, instead of across as in the single action.

Whatever opposition be shewn to the Sewing Machine, it must succeed in this business, for which it is so well adapted, and it will eventually be useless to oppose it. The steam engine did not progress so rapidly as has this ingenious toy, when compared to the gigantic specimens of machinery now exhibited in various trades. It has in ten years secured a firm and lasting position; it is increasing in popularity and decreasing in cost; and at the expiration of various patents it will, no doubt, be within the reach of the poorest artizan. It has disseminated itself over the civilized world, and it

could no more be stopped now than could the power loom. Let us hope that the injury the machine may inflict upon the workmen may be as slight as that inflicted by them in their ineffectual efforts to damage it.

Another great business in which the Sewing Machine is advancing rapidly is the clothing trade. This large class of trade was as badly paid, and the work as clumsily and slightly got up as was the slop shirt business already alluded to. The poor artizan, purchasing what he thinks to be a cheap garment, finds to his cost that it is really dear, owing to the cheap price at which it is made. The fault after all lies with the public, for a very large class persist in going where they can buy cheapest. But Sewing Machines have obviated this state of things in a great measure, as clothing now obtained from the cheapest clothiers is made by machine, and is, undoubtedly stronger than the cheap work made by hand and formerly supplied by the cheap clothiers. The work must be strong if executed by competent hands and good material be used in the sewing. In this business, again, the machine has largely benefitted the poor sempstresses, who were formerly occupied upon this class of work. A great number of them are now working machines at good wages; many of them at a pound, and the majority at from twelve to sixteen shillings per week. This surely is a great good! and I feel satisfied that a more perfect knowledge of the business done by these machines will satisfy my readers that this statement is not exaggerated. I know city firms whose payments for this work exceed anything stated here,

and hundreds can corroborate this statement. Female labour, in this class of industry, will be greatly benefitted when the machine entirely supersedes hand work — when the poor workwoman no longer toils over soldiers' coats at the starving prices now paid for them.

For seaming use a strong thread: stitching and binding silk, now known as machine-twist, may be obtained at almost any of the wholesale city houses, and at a many trimming sellers. The usual twist is not so well fitted for machine work as this article; it is too loosely twisted; it can be used, but the stitch is not so neat or distinct as when machine twist is used.

In commencing operations be careful not to use a needle larger than the material used for sewing requires, for the reasons previously stated. Choose a needle sufficiently large to carry the thread without being difficult of threading, but not too large. In running seams, if not basted, hold the bottom piece of work tight, or when you reach the end you will find the top piece much longer than the bottom; this may be accounted for by taking into consideration the extra pressure which the under surface is exposed to in consequence of the top spring pressing more tightly upon a thick than a thin surface. In machines feeding from beneath this is not so liable; it is easily remedied by a little care in either case.

For binding there is apparatus capable of being fixed upon any description of machine. For stitching outside seams use the double action machine of Messrs. Thomas and Co. In manufacturing clothing, particular attention is required in

fixing it ready for the machine: in making coats this part of the process demands particular care and requires an experienced workman—I, of course, allude to that class of work which pays for it.

There are so many kinds of apparatus for binding that I am almost at a loss to give directions suited for their use, without giving an explanation of each, which would be tedious. All binders should be fixed in front of the machine, and should be horizontal with the feeding parts, so that the binding lies parallel on the bed of the machine; a binder will only do one width of binding; to shift the binder, screws are used in a frame at the bottom of the feeder, which admit of its being moved to the right or left with ease.

Mantle making almost comes under the same remarks as tailoring. In mantle making the prices paid for the common descriptions of work debar the use of silk in stitching: a very excellent imitation of silk (when used in colors, but easily detected in white) will be found in Brooks' glacé threads. The light Alpacca now used in mantle work gives a great deal of trouble to those persons possessing machines suited only to a heavier description of work, for this class of material offers more resistance to a good stitch than any other fabric I am acquainted with. To do it properly and effectually a lighter machine should be used; the lighter the better. A great deal of binding work is required to be done in mantle making, a simple description of which may be illustrated in the following manner:—Take a piece of thin card board, one inch wide, double in on each side a quarter of

an inch; then place your binding under each of the portions turned over; this done, double it again exactly in half with the binding in it, then pull an inch of the binding through, which will come through quite evenly; place your work in the binding then under the foot of the machine, holding the card in your right hand and steering the work with the left. This refers to half-inch binding, but can, of course, be adapted to any width required by using a wider or narrower card. But the low price at which binders may be obtained renders it scarcely worth the trouble, more especially as it deprives the worker of the use of the right hand, which in mantle work, where the binding is sometimes vandyked, makes it very awkward to any but a first class hand, and even then requires practice. Almost any description of light machine is applicable to mantle work.

Among the first classes of manufacturers who adopted the Sewing Machine were the shirt and collar makers, and in no other business has it been so extensively and universally used. Many firms in the city are at the present time working from eighty to a hundred machines, the principal of which are Thomas's and Wheeler Wilson's, the first-named greatly preponderating; both, however, are well adapted for this description of work. Messrs. Thomas's No. 1 machines are used. It is hardly probable that hosiers will use these machines for manufacturing purposes, as the low prices at which articles are supplied by wholesale city houses deter the retail hosier from making them. I wish to offer a few remarks to those persons who either possess or are desirous

of possessing machines, and whose object is to obtain work out from manufacturers, a system extensively practised, and by many houses preferred to an outlay of capital for machinery and working premises. To the young beginners of this class I suggest the following instructions:—In all large manufactories for these goods the work is divided and sub-divided into many processes; this is done for quickness and cheapness, as each hand becomes well practised in that particular branch she is continually engaged upon, and therefore does the work much better and with more advantage to herself and employer than if she had to finish it throughout. This may appear objectionable to the proprietor of two or three machines, but a practical application will convince him that work may be done much better by the employment of two good hands, one running and banding the coarse work, and the other stitching.

In the first process, for a Paxton collar, we take the three thicknesses, fronts, linings and back, run them together by machine, cut the corners off to prevent them turning out clumsily, then turn the top, scraping the seam over slightly to the back, so as to prevent a rough edge when dressed; this finished, have the top stitched, then let it be tacked into the band and banded—(good hands will band without tacking, but it ensures precision)—when banded have the band turned and stitched, it is then ready for holeing. For pocket collars, run the pockets, turn them, and then proceed as with the Paxton. The even pocket is the most sightly and the safest, but in low class goods the top is made as a Paxton,

and the pocket turned up and tacked, saving the trouble of running. Two-fold goods, such as turn down collars, have the running done rather wider, and are then stitched on the running; this ensures solidity, and produces better and more sightly stitches. The bands of these collars have to be put on the reverse way to the Paxton, so as to shew the fine on the outside when ironed over. To make corded goods let the first row of stitching be put in the top, then place in the cord pushing it well up in the corners with a piece of wire ground off at the end to prevent it injuring the material; there is no necessity to tack the cords in if it is stitched by a good hand. After the first cord is stitched in, place in the next, pushing it well up in the corners forming a right angle, and continue *ad libitum*. Although simple in manufacture, there are few articles of dress made so well as a shirt collar. An immense competition keeps the manufacturers well up to the mark in this respect.

In offering a few observations on shirt making, I may say that the same description of machine is used as for the shirt collar making, except when the shirt is made throughout by machine, with outside seams, when a double-action machine is used for the sleeves and body. The most general process is to make the trimmings only by machine, except, perhaps, to stitch the shoulder-strap when basted on the body. The trimmings are made up separately: the collars or collar bands, the wristbands and fronts, are all prepared and then given out to the body makers. The same process is observed in making cricketing flannel shirts, except in the quality of

the sewing material, silk being generally used for the top stitch, and cotton for the bottom; this economises the silk, which is no slight advantage when that material costs forty shillings per pound. By using a stout material for the under-stitch a fine plump appearance is produced on the reverse side, which is a very desirable object in sewing a soft fabric like flannel, when the stitch sometimes sinks upon soft light colored goods, so as to be scarcely visible. To remedy this defect, always use as light a top tension as possible, taking care to keep a sufficient pressure to prevent the stitch looping at the back. On dark flannels, unless the material contains a large proportion of cotton, the silk will shew up with almost any tension, but, upon the common quality invariably use a light tension.

These remarks may appear superfluous to persons understanding the manufacture of these articles, but it is not to them I address myself; it is to that class of persons seeking for information, for I imagine they will form the largest proportion of my readers. To a regular practitioner it would appear very much like "teaching my grandmother how to suck eggs," but to young beginners I venture to predict they will be found essentially useful, and prevent them trying those blundering experiments which we invariably make when we attempt the description of a work we do not thoroughly understand.

There are few collars or shirts made by hand at the present time, as it is a fact generally acknowledged by manufacturers that machine work is much neater and stronger.

This is a tacit and *bona fide* acknowledgment on the part of a shrewd class of men who are not prejudiced either to one process or the other, but who simply produce the best article for competition with their fellow competitors.

Another branch of hosiery is the making of neck ties, which has not succeeded so well as the last-mentioned businesses in producing machine-made articles. The fact of the silk being cut on the cross makes it very liable to stretch, and hand work cracks and breaks in this class of goods unless a tape be run up the seam and then stitched on the tape to prevent the stretching and give solidity to the work. I am alluding to Beauforts and Alberts. In those articles cut straight the difficulty is—in consequence of their being worn so narrow—in running them at all, either by hand or machine: to turn without breaking the silk, more particularly in armazine, these goods are generally slip-stitched on the outside, that they may not be turned at all. Nevertheless, I am of opinion that the work can be done by machine, and done well too; and I think the machine can be more generally and profitably engaged in this business than by merely stitching fancy tips. The tie trade employs a large number of hands, and I am satisfied machines could be profitably employed in the business. In stitching the ends of fancy ties a fine silk is used; the corded ends may be fixed in precisely the same manner as previously explained in cording collar tops: string is the best material to use for this purpose, if evenly made, as it is stiffer and gives a support to the end of the tie, keeping it straight and angular. Gauze is frequently inserted in

these tips; the process is simply to tack the gauze in the tips, then stitch carefully on the edge of the silk; it will require a good hand to do this well, as it requires great precision in stitching upon the edge of the silk, any deviation destroying the appearance of the goods.

To prepare the tips to let in either gauze or any other material required to be inserted, the best method is to turn the angles over a piece of thin zinc with a warm iron; this method, known to collar manufacturers as "patent turning," is the simplest and best process I know of.

Quilting the linings of stocks upon satin with a soft lining may easily be done by tracing the angles first with a piece of French chalk, which can be effaced afterwards; an experienced hand, however, would quilt these linings without tracing, as it is not so difficult as either cording or braiding.

The edges of stiffeners may be bound by a binding apparatus, as it is not necessary to break off to each body, but may be continued until the cotton is exhausted.

I am well satisfied that the wider descriptions of neckties could be run by machine: I should say a machine making a chain stitch on the reverse would be the best adapted for this purpose, as it produces a stitch possessing greater elasticity; they should be run with a loose tension, or they will draw; I have run ties in this manner which have come out as close and as straight as any hand work. Many manufacturers prefer having them made by hand rather than take the trouble to persevere in accomplishing that which has hitherto been a difficulty. They remark—"We get them

run so cheap, there is really very little difference." Allow me to remind those persons that a large manufacturer would find a saving of thirty per cent. upon making; not a little difference at the end of a year! but it requires a little management and perseverance to do it. I am acquainted with a few houses which have succeeded, but the majority have been influenced by the statements of others, and have never even tried it.

There are one or two other branches in the hosiery trade that may be done by machinery, such as braces, belts, and gloves, and work is given out by city houses to persons who have their own machines. There is very little work to be done to braces by the sewing machine beyond stitching the ends. Belts are usually coupled with braces, and lately a great many boys' bronzed belts have been made which have been stitched round by the machine with white silk. In stitching these articles, if a shuttle machine be used, let the tension be sufficiently tight to shew the stitching equally on both sides the belt; it looks very bad to see the shuttle stitch lie like a thread along the material; a turn of the tension screw alters it to a stitch.

Glove work requires a light machine—and we may here revert to our remarks (in the preceding page) on the chain stitch, which is very elastic, and, consequently, well suited to a glove, which is a light article and often severely strained. Fine cotton is used sometimes in common descriptions of gloves, but I would always recommend silk if the work will pay for it. Silk is much more

elastic than cotton ; a piece of soft finished silk will always stretch before it breaks ; it is not so with cotton, therefore, I recommend silk as the best material that can be used in the sewing of such an elastic article as a glove. The Sewing Machine throws up a very tight looking stitch with a moderately loose tension upon kid leather, on account of the softness and toughness of the material and the closing up of the perforations. The machine is principally used for gauntlet gloves and the top binding of cloth gloves.

The Sewing Machine is also very much used by cloth cap makers, and for binding straw and felt hats. In working upon cloth, the directions given to tailors hold good, but there is a difficulty in this business in stitching the stout peaks, especially at the present time when the stout rifle peaks are so much required. These peaks are manufactured as hard as wood ; the japan puts a brittle surface upon the board or leather of which they are composed, thus rendering the needle very likely to break in sewing them. The following method will be found the best for overcoming this difficulty :—Grind the needle down on an oil stone until the eye is not more than a bare eighth of an inch from the point, and let the needle-slide of the machine be lengthened just sufficiently to admit of the work going under. By thus shortening the needle and lengthening the slide that holds it, the resistance offered by the leather is obviated, and the needle is much less liable to bend or break : a long needle would break upon a substance that a short needle would easily pierce. This operation may be performed when the

machine is required to stitch any hard brittle substances. All kinds of peaks, thick hard-grained leather such as is used in saddlery, and no doubt many other articles not yet manufactured by the machine will require the same alteration. The binding may be put upon hats and caps easily with the binding apparatus; it is very easily used in this business, as the articles requiring binding are small. The running seams of caps can be performed by almost any description of Sewing Machine, as there is no such stress upon the seams as in coats and other articles of wearing apparel.

The binding of straw hats is also another very easy process by the Sewing Machine, and is more readily executed and turned out with a neater appearance than by hand. Felt, straw, cloth, and all this class of goods the machine shows up in to great advantage. In binding Paris or silk hats, be very careful not to use a large needle; if it is strong enough to pierce the material the smaller the better. No article in wearing apparel will so easily give way as the rim of a hat if perforated with large holes. The frequent lifting of the hat from the head by the rim weakens it, and an undue quantity of perforations weaken it still more. For the same reason too fine a stitch should not be used in binding these articles.

The Sewing Machine can be usefully employed, and will, eventually, be much more generally used in the manufacture of carpet bags, &c.; the cords can be inserted and stitched, the seams run and the handles stitched, but they will require a heavy machine.

Another of the businesses that has frustrated the Sewing Machine has been the umbrella and parasol business; but I am of opinion that the machine might be successfully employed in the manufacture of these goods. The machine stitch is very liable to crack in an umbrella or parasol in consequence of the great strain put upon the ribs when open, particularly in cotton goods after being shrunk by the rain. This has been the principle obstacle: the machine was tried for these goods as early as 1848, but failed, but subsequently it partially succeeded, and they can now do the hemming by machine. There is undoubtedly a great deal of work in an umbrella or parasol that never can be done by machine, such as tipping, bracing, &c., that is fixing the cover to the ribs, and it would be impossible to do this; but I feel assured that the running could be accomplished by the machine. The difficulty to be surmounted is to produce a stitch that will bear the strain of opening and shutting, expanding and collapsing, in all weathers; and to meet this difficulty is required a great elasticity of stitch; this is, really, the desideratum. In making umbrellas or parasols by hand, if the quarters (or eighths) are not stretched sufficiently before running and well scraped afterwards, the seams will burst. This is the very thing that occurs with the machine work; if a manufacturer takes an unprejudiced person, one who thoroughly understands and appreciates the capabilities of the machine, half the difficulties are overcome. Let the gores be well stitched before commencing operations, and let them be run by a light chain-stitch machine, taking especial

care to avoid too tight a tension, and, on the other hand, not too loose, or the seams will gape; when the eight seams are run and fastened off (by hand) at the neck, see they are well scraped by the nail from the tips. Silk will be the best material for this work, as it is so much more elastic than thread: avoid glacé cotton; if cotton be used at all, use a soft-finished undressed cotton. When a cover is run in this manner I see no reason why it should not stand an equal test with any hand work.

In making these goods by machine particular attention should be paid to the cutting, so that it may not require, as is frequently the case, a half-inch seam with one lot of goods, and perhaps only an eighth-inch seam to another, before they will fit the frames. This spoils the article when made by hand, and, of course, can have no other effect when made by machine. The hemming can be done beautifully by machine to which an apparatus can be fixed that turns down the hem required at the raw edge as it goes through. This hemming apparatus may be obtained at Messrs. Newton Wilsons', High Holborn. To hem them neatly it should be done previous to the running, as the apparatus will not allow of the running seams passing through it. For corded hems the cords must be basted in.

Another objection raised by parties in this business to the Sewing Machine, is the rapidity with which the work can be executed by hand. I have seen quarters run up at a speed that would astonish the uninitiated; the whole of a parasol quarter is taken upon the needle (a long straw) before

drawing the thread through it. But even this cannot compete with seven hundred stitches per minute, which is no great speed for a machine, and may be easily attained and kept up upon this work, as there is no necessity to break off at a quarter, but the dozen work, the ninety-six gores, can be proceeded with if the thread does not require replacing.

If an umbrella manufacturer were to take this earnestly in hand I am sure he would succeed, but, let him take particular care to avoid employing prejudiced persons in any part of the process. Have the cover cut carefully to the frame so that an uniform seam may be secured, to insure regularity and precision of fit. It is important that the directions given about the stretching and scraping should be observed.

The bag making, both in oil-skin and gingham, can be executed much closer and far more economically by the machine than by hand; there is no difficulty whatever in this operation.

A large number of machines are at the present time employed in making ladies' jackets, holland and marcella; any light machine is capable of this description of work, which is extremely simple and easily performed. The running of the seams is executed neatly and rapidly, if the work is sub-divided, as it should be, to economise time and labour. The most particular part of this work, in connection with the machine is the braiding and binding; braiding is generally done by the device being first traced upon the article, and the machine hand following it carefully. But I am of opinion

that it can be done most readily and quickly by hand, in straightforward work, taking into consideration the time occupied in tracing, &c.

I may as well state here that I wish it to be understood that I am not universally recommending these machines for all descriptions of work; but, after considerable experience, I plainly and simply state what I consider the machine is fairly calculated to do, and to do well and cheaply; if any operation can be adopted which is cheaper, better, or, on account of time occupied in fixing, perhaps quicker, by hand, I will honestly acknowledge it, and not mislead where my intention is to instruct.

I intend this book as a guide as to what the Sewing Machine will do, and by misleading my readers as to its capabilities I should not benefit, but rather bring the whole of these remarks into bad odour. I know of no machine that is capable of felling as it is done by hand, or of pleating a dress, or the sleeves of a shirt, tipping or bracing an umbrella, or making a button hole; I have seen machines *supposed* to be capable of performing the latter operation, but, with all due respect for the talent of the inventors, I am afraid I must pronounce them, at least for the present, to be miserable failures, and, as well calculated for ploughing a turnip field as for making a button hole.

On the other side you meet a deal of prejudice from persons unacquainted with the capabilities of the invention and full of obstinate self sufficiency, who pronounce them to be useless. This is simply absurd, and we can afford to laugh at it; the

sensible man or woman will give anything likely to benefit themselves and the community a fair and honest trial; and this is all that is asked for the Sewing Machine.

With a few observations on ladies' jackets I will close dress making. The machine is only useful in certain parts of this work, but where a large trade is done a machine would quickly pay for itself; but, I doubt the propriety of advising persons who do but a small trade in this branch to purchase machines. Ladies' underclothing is given out by several city firms to those persons who work machines of their own upon general work. Running, banding, and stitching may be done to this work by machine, but there is a good deal of hand work, such as basting, holeing, &c.

Quilting silks for linings of mantles, coats, &c., may be very easily and well done by the machine; if it be a new description of work to the operator, she should have the lines traced with a piece of French chalk, which can easily be brushed off afterwards.

Binding upholstery work can be executed by machine, and is done by several large firms. The binding is put on by the apparatus described in the instructions to tailors for binding, the only difference being that it is on a larger scale to suit the width of the binding. Brighton and railway rugs may be bound in the same manner.

Handkerchiefs, napkins, ladies' under clothing, shirts, &c. may be hemmed—that is, a turning made and stitched down—by the apparatus sold by Messrs. Newton Wilson for that purpose.

I will next proceed to give instructions, as plainly as I can, for the working of the different descriptions of machines most in use. There is always a difficulty in explaining machinery upon paper without diagrams; I shall, therefore, as briefly and explicitly as possible, give a description of and directions for working the machine. Intelligent persons will readily understand an explanation when the article is in front of them: others, again, may be very dull in matters relating to mechanics, I will, however, divest my explanations, as much as possible, of technical phrases that would be mere unintelligible jargon to nine tenths of my readers, and give them in plain every day language.



INSTRUCTIONS.

When you require to fix the Sewing Machine, choose a good light place, a north light if possible. It is very necessary the situation should be light, not only on account of the rapidity with which straight lines may be required to be sewn, but also in consideration of the eyes of the operator when engaged on colours, which, moving so rapidly through the machine dazzle the sight and sometimes cause partial blindness. I will commence with directions for working Thomas's machines. The bench should be three feet high, to admit of the operator sitting on a high stool giving her power over the treadle—the treadle of this machine is different to any other; it may be worked by both feet as it has a leverage each way, and is propelled by a crank pin, precisely as in a lathe. Most other machines are sold with portable tables attached to the treadle. In fixing the bench for the machine care should be taken that it is strong and firm, as a tendency to vibration must militate against particular descriptions of work; to prevent oscillation good stout quartering should be used for the supporters. I would advise a

gut band as the best and cheapest, fastened with a hook and eye as a lathe band; I have used gutta percha, leather and other material, but find the gut band the cheapest and best, which, although the most expensive at first, lasts a great deal longer than any other: a very good band can be made in the following manner:—take a leather thong the required length, then shorten it by about four inches; supply the deficiency with a spiral wire spring, fixing it on each end of the band; the elasticity of the spring keeps the band always taut. For winding shuttle reels Messrs. Thomas supply an apparatus; a piece of elastic cord will make the best band for this. To wind the reel fix the end of the shuttle-reel, that has the slot in it, into that part of the machine nearest you, where you will find a small piece of iron projecting to fit the neck in the reel, which holds the reel tight; draw back the spring at the opposite side of the binder and fix the reel tight. Twist one or two turns of thread round the screw holding the collar on the spindle nearest you, and then wind the reel, letting the thread go rather tightly through the fingers; lay the cotton on the reel as nearly as possible layer on layer; the more evenly this is accomplished the better for the work. To put the reel in the shuttle keep the end of the cotton underneath towards the shuttle bar; open the latch at the thick end of the shuttle, place one end of the reel in the hole at the point end of the shuttle, and then press the reel in at the other end; when it is sufficiently pressed down upon the spring as to leave the latch free, close the latch, next pass the thread through the bar at the bottom of the

shuttle and then through as many holes at the top of the shuttle as is required to give the necessary tension.

There is a winder in use consisting of three cogs working together, which produces for every turn of the handle (of the common winder) about fifty revolutions of the reel, without the aid of a band, the band being rendered unnecessary in consequence of a spindle being fitted to a small cog wheel.

The reel supplying the thread forming the top stitch is fixed upon a spindle just above the front lever, the tension being placed upon the spindle by a small steel spring which is governed by a screw; this thread is then carried down through a nipple standing out to the right of the needle slide, and through the cotton spring working across the slide, then through the hole at the bottom of the needle claw and then through the eye of the needle. When the needle is threaded turn the wheel gently, always to the right, until the shuttle driver comes sufficiently up the box to receive the shuttle, place the shuttle in the driver, then turn gently until the needle rises, pull the under-thread up and lay the two threads under the foot of the machine, then place the work requiring to be sewn under the foot, start the machine by turning the handle from you or to the right, and then propel it by means of the treadle; to stop the machine suddenly apply the hand as a break to the cam wheel, by this means you may stop it almost at a stitch.

The parts requiring to be oiled in these machines are easily seen, having small holes drilled out to receive the oil, all parts with the exception of the cams, leg, and slide should be

oiled once a day slightly. Do not allow the machine to be pulled to pieces too often by inexperienced persons; it can be kept clean without this trouble.

When the rollers which work on the end of the lever and driver are worn by the friction of the cams they may be taken off and reversed; this is done by placing that part on the pin that is least worn where it was most worn. When this has been done once, and the rollers are again worn small and work loose, occasioning the slip stitch, they will require new ones. Should the hole in the needle plate wear too large, and the work, if it is thin, be driven down the hole and destroy the feeding, make it smaller in the following manner: rymer the hole out a little larger and fit tightly in it a piece of steel wire; cut the wire off and rivet firmly on each side the plate, then file level with the plate the two rivet heads (if this be done neatly the wire inserted can scarcely be detected), then drill a fresh hole the size required.

Should the teeth of the foot or feeder wear smooth and refuse to feed, sharpen them with a small four-inch taper saw file, as you would sharpen the teeth of a saw. Before commencing work with a new needle always try it with a piece of thread or cotton to see if it cuts in the eye; should it cut, apply a little flour of emery mixed with oil upon the cotton, and work it gently backwards and forwards until the burr is worn smooth.

I would advise learners upon all occasions to practice some two or three hours on the treadle, detached from the machine; they should learn to tread it regularly and always

to the right; when the pupil has learned to do this easily, without effort or holding to the bench with one hand—a practice peculiar to learners—they may connect the machine and commence learning to turn them together. It is as well to remove the leg or feeder and the needle or shuttle for the first hour or two, and then no injury can possibly be done to the machine by accidentally turning it the wrong way. When tolerably perfect replace the needle and leg, but not the shuttle; do not thread the needle, but place strips underneath and let the needle perforate the material as though stitching was being done; next learn to stop the machine when required and to turn a corner; the corner must be turned when the needle is down in the work, by lifting the foot from behind and turning the work round the needle; any angle, if ever so acute, may be got in this matter, rendering a square corner more easily attainable by machine than by hand. Up to this time no damage can take place by turning the wrong way, therefore, I recommend the pupil to get quite perfect in this operation before replacing the shuttle, as it is at this stage that accident is likely to occur.

To fix the needle—keep the grooved side of the needle opposite the worker, and let the corresponding marks in the slide and cheeks become level, forming a straight line across them; when these lines are straight the eye of the needle should be exactly level with the needle plate, and when this is arranged, screw up the needle clam, using each screw equally and firmly. When the needle is fixed, turn the machine carefully round to see that it strikes fairly in the

centre of the needle hole, as it is possible it may have got bent in fixing if this is not done carefully; if it should not strike correctly, bend it by rubbing the flat part of the thumb up and down it until it strikes fairly in the centre.

In commencing work, different materials require different tensions, a soft substance like flannel or loose cloth requiring a lighter tension than substances like patent leather, &c. As a rule, very thin fabrics, such as linen only two thicknesses, require a tight shuttle tension, or the under cotton shews at the top, producing running work and destroying the beauty of the stitch.

For very fine work, with a No. 1 machine, use 70 or 80 cotton with a 24 needle; 40, 50 or 60 with a 23 needle. Silk requires a 23 needle for fine work in light flannel goods, or silk neck ties, or any thin work requiring silk. With a No. 2 machine, fine work may be done with 40 or 50 cotton, using a 23 or 24 needle; a No. 2 machine will do a great variety of work from shirt making to tolerably heavy boot work; for boot work use a 20, 21 or 22 needle, according to the thickness of the material, the higher numbers being the finest.

The No 1 machine is more suited to the following work:—Shirts, shirt collars, flannels, light mantles, gloves, ladies' under-clothing, hemming handkerchiefs, dressmaking, or any other material about the same substance as the above-named articles.

The No. 2 machine is suited for cap making, light boot making, tailoring, the general run of mantle making, belt stitching, binding upholstery, rugs, &c., &c.

The No. 3 machine is fitted for men's strong boot making, pilot cloth, saddlery, sack making, &c. This machine is capable of executing very heavy work. These machines are frequently used double action, I will, therefore, offer a few remarks upon the method of working them:—Remove the leg that feeds across the machine and adjust the one feeding towards the wheel; some persons have the end of the machine towards them, others sit to them precisely as to a single action; this machine is useful, as in the ordinary single action machine it is difficult, and in some cases impossible, to get up the narrow closed seams.

I will venture a few remarks upon irregularities that may possibly arise from various causes, the principal of which is what is termed slip or miss stitching. This inaccuracy is caused by the shuttle not passing through the loop formed by the needle thread. It is as well to reflect upon any of these irregularities, and try to discover how they occur; ten minutes consideration, before altering this or that, is never wasted, and may probably save hours of unnecessary thoughtless meddling. In the first place, see the needle is set as already explained: if it is too high the loop is not so large and palpably formed as it would be were it correctly set. Again, if too low, the loop is contracted by being drawn to a long acute angle. Should neither of these causes, which are the most likely, be the real one, see the point of the shuttle is in good order, as it may be accidentally dropped and blunted. Look next to the cotton, see if it fits the eye of the needle, or perhaps it is too wiry; a glacé thread is

unsuited to these machines; to prove this take a piece of glacé thread and form a loop with the fingers about the same size as the loop formed by the machine; you will find it twist tight up very frequently, so that it would be unreasonable to suppose that a loop formed with such great rapidity by the Sewing Machine, and made with this material, should be perfect every time. If the slip stitch is the fault of the cotton, a soft smooth undressed article will at once remedy it.

If the machine still slips, see that the rollers working in the cams, and propelling the shuttle driver and needle lever, are in good order; if these are loose, an uncertain vibratory motion is communicated which has a great tendency to destroy the regularity and promote slip stitching. The reason of this is obvious; when the shuttle driver reaches the loop, should the needle lever have an unsteady oscillating motion, as it will have if the rollers are loose, the loop loses its precision, and the shuttle passes without catching it. Any of these causes are likely to produce this irregularity, but I trust the directions given will enable even the novice to surmount the difficulties. Should the machine be much worn, of course many other obstacles will present themselves to the operator, and the shortest and most inexpensive course, in this case, is to send it to an experienced practitioner.

Should the work loop at the back, it may be remedied, in most cases by the following directions:—Either loosening the shuttle tension or tightening the top, in some cases either will have the effect; if not, see that the top thread pulls evenly off the spool; bad winding, or the spindle

catching the wooden reel at places, is likely to cause this; should this be the reason, it is not only liable to loop in some place, but also to cut when it arrives at the catch. Should the stitch loop only at turning a corner, loosen the shuttle tension slightly; if you only thread the shuttle through one hole, the only way to loosen the tension is to remove the spring from the shuttle, and to substitute a weaker one in its place. The most frequent reason, however, of this fault is, the operator easing the speed off gradually as approaching the corner; this relieves the top tension and causes it to loop. Always approach a corner as near as possible at the speed worked at upon the straight, and stop the machine quickly, and start again as quickly as possible after the corner is turned.

Should one stitch be larger than another, the feeding gear is in some way affected. See that the shaft running along the top of the machine at the back, and fixed by a screw at the extreme right hand of the machine, works regularly, neither too loose and shakey, nor too tight and binding. This shaft moves the leg and foot or feeder, and, of course, governs the length of stitch. If the machine has been some time at work, the foot may want sharpening in the manner already described. Should the cotton break or cut, just see that the eye of the needle is smooth; if it is jagged, rub it out gently and smooth with oil and flour of emery: another reason is the needle being set too high. Look also to the cotton or thread and see that it has no knotty protuberances in it, as if these meet in the eye of the needle either it or the

thread must break. Should neither of the above-named causes account for it, examine the needle hole and see whether it is jagged or damaged by the breaking of a needle raising a burr upon it inside the hole, which is likely to cut the cotton. If a new shuttle has been recently fitted to the machine, observe that it does not fit too tightly, or that the spring on the shuttle driver is not too strong, or jagged.

The reader will probably think this "a chapter of accidents," but I do not intend it to be so; I have machines of this make at present that have worked two years and have not incurred an outlay of many shillings for repairs. The greatest disadvantage these machines can be put to, is to allow a careless and inattentive person to work them—those who "cleverly" pull the machine about, alter its gear, and then exclaim "I have tried everything"—Such persons very often try everything but the right thing, which would have suggested itself, no doubt, to any one who had given a few moments consideration to the defect, and have enabled them to apply the remedy.

I intend the above as a remedy for irregularities that may appear, and for the instruction of the operator; I do not mean to say that they will, or are likely, to occur very often, if the machine be worked carefully, but I think it will be beneficial to the operators to possess the means themselves of remedying such defects, as it would require some experience to enable them to obtain a perfect knowledge of these remedies.

To produce a stitch the same on each side with these

machines use a light shuttle tension, not so light that the shuttle thread shews on the top, but sufficiently tight to allow the shuttle stitch to bury itself on the reverse side, where it will form a stitch equal in appearance to that on the top. In thin work, such as calicos, linens and muslins, the bottom stitch will not shew so distinctly as upon cloth, leather, &c. Messrs. Thomas and Co. have a warehouse at 34, St. Martins le Grand, and others in the provinces, viz., at 131, Market Street, Manchester; at 2, Smithy Row, Nottingham, and one in Glasgow. A very great reduction in the price of these machines has recently been made.

The next machine I will attempt a description of is that manufactured by Messrs. Wheeler Wilson, and licensed by them from Mr. Howe, of the United States. This machine is well adapted for sewing light descriptions of work; I have worked them, and found them to be thorough good working machines, seldom getting out of repair. In appearance the work produced is very much like the stitch produced by Thomas's machine upon light goods, but the under cotton stands further out from the material sewn, than the stitch produced by Thomas's machines. The machine has a stationary arm, extending over the frame reaching to the needle plate; at this extremity it is supplied by a leg regulated by a spiral spring producing the required pressure upon the work to assist in feeding. The actual feeder is a frame formed in the following manner:—Two pieces of steel an eighth of an inch square are placed parallel and joined at one end, leaving an eighth space; this space is filled by a tongue

fitting in the frame in such a manner that, though sufficiently tight to prevent its moving from side to side, falls when raised by its own weight. This small frame is fitted across the machine, and the tongue is raised by an eccentric moving close to the driving pulley; the frame is propelled by a piece of watch spring in the shape of a bow, fitting behind a cross piece at the left hand side under the needle plate. The end of the tongue is similar to a coarse cut file, known as a float; when the eccentric raises and propels this tongue, assisted by the pressure from the leg above, as already described, it grasps the work and carries it forward, or to the right hand of the worker; these machines, as the operators sit in front of them, feed from left to right.

On the left hand side of the stationary arm explained, works the needle arm, propelled by an eccentric movement from beneath; at the end of this arm is the nut and washer for fixing the needle. The needle, when fixed, passes through the needle hole with a tight angular loop, where it is met by that part of the machine known as the "hook," but really a circular shuttle; in shape this hook is like a ring half filled up and a segment of about one sixteenth cut out of the hollow, forming, of course, two prongs, one of which is bent in slightly. This hook is loaded with cotton contained in a thin steel spool fitting in the hollow of the hook; this cotton is pulled up under a bar at the bottom of the needle plate and through the needle hole before commencing work. When the needle descends, forming a loop, one of the prongs of the hook penetrates the loop and draws the

thread contained in the spool through it; it is then eased off by the peculiar construction of the hook, and the needle rises and draws the stitch tight. This machine is very difficult to explain to persons who have never seen it, but those who have seen it once will recognise it from this description. To fix the needle, which is curved, keep the grooved side of it to the right hand, and see that the needle just escapes the flat part of the prong of the hook, and the eye of the needle about the sixteenth of an inch below the prong of the hook, catching the loop. If you have any doubt about the needle being correct, thread it, and see that the hook passes clearly through the loop.

The cotton is fixed on a spindle at the back of the machine, and regulated by a screw, acting upon two steel plates through which the cotton passes; it is then brought through the hole by the nut which screws the needle tight, and then through the eye of the needle. In commencing work lift the foot pressing upon the feeder and place the work beneath it, hold the two cottons—that is, the under spool cotton brought through the needle hole as described, and the upper spool cotton that is threaded through the eye of the needle—hold these in the right hand, and start the machine by turning the fly wheel under the table from you with the left hand.

This treadle is made in a different manner to the treadle of Messrs. Thomas and Co's machine; it is a cross piece of metal upon a spindle, requiring to be worked with heel and toe, that is, to press with each alternately; this is to allow of the machine being stopped or started with greater ease.

I would advise the learner to practice upon the treadle before connecting it with the machine, always turning the fly wheel from you.

To wind the spools a small winding apparatus is fixed on the right hand side of the table; to commence winding disconnect the driving band from the machine, and slip the small gut band on the winding pulley, fix the spool on the end of the spindle, and use the treadle of the machine, precisely as when stitching by machine.

These machines are very mechanically and elaborately manufactured, indeed our transatlantic cousins appear to put a superior finish to their manufactures, from a clothes-peg to a sewing machine, and it is not finish and polish only at the cost of neglecting the real working parts, but they are beautifully made and fitted. Those that are genuine and made by the patentees, bear upon the needle plate the patent and license granted by E. Howe to Wheeler Wilson and Co., Boston, Massachusetts.

There are little irregularities that are likely to occur in this as in every other machine, and, as one of my chief objects is to enable the reader to work the machine with as little trouble and expense as possible, I subjoin the remedies for the defects likely to occur. This machine seldom slip-stitches; when it does this, the fault is either in fixing the needle, or because the hook has got shifted, but usually the needle is too high or too low; be very careful of this latter fault, as the needle, if fixed too low, is very likely to scratch the hook, which is then liable to cut the thread. If the

altering of the needle does not stop the slip, see that the needle arm is tight, if not, tighten the screws and fix the lock nuts, so that it cannot again get loose; but if the machine is not pulled about, it is very unlikely this arm will get loose. Should there be a difficulty in getting the work to feed, if the machine has been some time in wear, sharpen the tongue of the feed bar with a small saw file. If the bottom of the tongue be worn by friction against the eccentric moving it, solder to it a small piece of steel or gun metal that will bring it to its original form. In meddling with the feed bar, be cautious not to make the tongue work stiffly; as it retreats to form the next stitch it has to fall by its own weight, which is not much, and any burr left on the bar will prevent it falling. To avoid any annoyance of this sort, before fixing the feed bar in the machine lift the tongue and see that it falls easily and without shaking in the frame, which would produce crooked work, but, as the phrase goes, it should "fit, fill and go through."

Should the thread cut examine the hook carefully and see if it is scratched, and if so, remove the indentation with fine flour of emery and a little oil on a piece of leather, and, should the scratch be so situated that it could not be reached by the finger, cut a piece of soft wood the shape required, smooth and place on it the oil and emery, and so obliterate the scratch. Should this not be the cause, see that the needle is not too high and that the hook in passing through the loop has fair play; if it is tight and there is barely room for the hook it will cut. If neither of these things be the cause,

examine the spools, and see if the thread draws off with regularity of tension; if not, see that the reel fits easily the spindle it works upon, or see the tension the thread passes through is in order. Perhaps the thread may have clogged in the bottom spool; to clear this never use a needle, wire, or any hard or sharp substance that is likely to scratch the edge of the spool. The best means to remove the cotton, either when clogged, or when the end is broken off in the spool, is with a piece of calico or linen or ribbon, used in the following manner; let a person hold one end of a strip of calico and the operator the other, put the opening in the spool upon the edge of the calico, and run the spool backwards and forwards; this will bring the ends out. Should this fail, hold the spool over a gas burner, and burn the ends out, and afterwards polish it, but never use sharp substances to remove the ends. I have seen the ends removed by drawing the breath at the edge of the spool; I would not advise my readers to do this, as the flavour emitted is very unpleasant in consequence of the oil secreted in it.

Should the thread loop at the back, the needle is either too low, or the tension upon the top thread is hardly sufficient, but either of these causes are easily remedied as I have previously explained.

There is a leather pad fixed for the hook to work against; this pad is regulated by a screw and can be brought nearer to the hook as it wears from the friction; keep it always slightly pressing against the hook, and let it be oiled, but do not use too much oil here as it may reach the work.

The stitch is regulated by a small lever which works against the feeding frame and regulates the distance traversed, and also shortens or lengthens the stitch; to lengthen the stitch, move this small lever to the right; to shorten it, the reverse.

In working these machines I have found a glacé thread is the one best suited for them; they are unlike Thomas's machines, having no "rise" after the needle has gone down, and, consequently, having no slack to the loop. The loop formed is a long angle, and the cotton, which is drawn tight, is not liable to twist. I have used Brook's glacé threads, though there are several other makers of glacé threads who turn out a good article.

These machines are mostly used for shirt making, ladies' under-clothing, and thin material; they work at a speed of from seven hundred to a thousand stitches per minute. The circular race allowing a greater amount of speed than a horizontal movement. They are sold fitted to a portable table, but can be fixed if required, and they are much better fixed as they are then less liable to be affected by the rapid motion which causes a vibration to the machine.

The next machine I will endeavour to bring to your notice is Messrs. Grover Baker's. This machine is used for a great variety of work and is unlike the two already described, as it produces a chain stitch on the reverse side which bears a great similarity to the tambour stitch; upon the top side of the work sewn the stitch is straight and well formed. This chain stitch is sometimes objected to as unsightly, but the

chain is upon the reverse side and the stitch has a greater elasticity than a straight stitch ; it, however, pronounces the work as machine work, whereas in the straight stitch it is difficult for the novice to detect machine work from hand work ; unless, indeed, the machine work can be detected by its superior regularity and precision. A circular needle in this machine supplies the place of the shuttle in Thomas's and the hook in Wheeler Wilson's machines ; to produce the under stitch, the top needle, which is a straight one fixed at the end of an arm, descends through the hole in the needle plate, and the circular needle passes through the loop formed by the descent of the top needle. The work is fed and the stitch is regulated from beneath, and, as in Wheeler Wilson's, an arm, from above, assists by pressing a foot upon the work being sewn. This machine works well with either a glacé or soft cotton or thread ; the reel is fixed upon a spindle at the back of the machine, and the tension is governed by screws acting upon the spindle ; the thread is then brought over the machine through the arm and through the eye of the needle ; the bottom thread is held upon a spindle governed by a similar tension, and obviates the use of either the shuttle reel or the spool as in the before-mentioned machines, a reel of thread once placed upon the spindle working out without the trouble of winding, unless some accident occurs or the thread breaks, when the under needle must be threaded again. The under thread from the tension is carried through a loop at the end of a piece of wire, and then through the circular needle, and brought up through the needle hole ;

raise the foot, place the work under it, and the machine is ready for use. The treadle is on the same principle as that used for Wheeler Wilson's, being pressed by the heel and toe.

These machines are very largely used in England, and in the United States a surprising quantity have been sold, as they are extensively used there for domestic purposes. In America the working female population (which is small compared to England) are well paid occupying positions in domestic circles not as mere servants, but a large proportion, generally well educated, as governesses, housekeepers, &c. I am speaking of the natives and not of Irish importations, which, unfortunately, as a body, are not sufficiently educated to hold situations of this description. Again, the female population are in a minority, and consequently, there is not a large class of unmarried females, as in England, who are compelled to earn an existence by the use of the needle. And, I suppose, the American ladies, emulating the example of fathers, husbands, mothers and brothers are more "go-a-head" than our English ladies, few of whom think of purchasing a Sewing Machine for hemming handkerchiefs and making baby linen. But even in England the machine is finding its way into the domestic circle, and will, undoubtedly, eventually take its natural position with the work box, and be reckoned as an essential article to the domestic arrangements.

The "Grover Baker," as has been stated, throws a chain stitch on the reverse side of the work; for reasons previously given, regarding the elasticity of the chain stitch, I would

recommend this (and other chain stitch machines) to be used on any fabric requiring an elasticity in the workmanship. This class of machine is, in my opinion, most likely to succeed in the umbrella and parasol business; the work is also especially suited to it, particularly for the running.

This machine is also used largely by tailors and boot-makers for seaming, which it executes soundly and strongly: to produce a strong, fine and close stitch, let sufficient tension be employed to draw the chain on the reverse side of the work well up into the back of the material. This machine is very easily examined, in case anything happens to the under-machinery, being arranged so that it lifts by hinges from the table to which it is fixed, thereby exposing the whole of the working machinery.

I have lately seen a shuttle machine of Messrs. Grover Baker's construction, in which the shuttle worked in a semi-circular race and produced two stitches at each revolution of the wheel. These machines are not obtainable in England, but may be had in America, and in Ireland and Scotland. The needle slide is the same as in the "Lancashire," being fitted in, and surrounded by a plate, to the frame of the machine; this needle slide is propelled by a cam movement from beneath; a foot presses upon the material, and the work is propelled by the ordinary process of Messrs. Grover Baker's machines. The needle in descending forms a loop and slack through which the shuttle passes, producing a stitch equal on both sides of stout material. The top thread is placed upon a spindle at the back of the machine and then

through the tension, which is two pieces of circular steel upon a spiral spring, governed by a screw, from thence under the spiral spring and through the slot in the perpendicular just above the top of the needle slide, then through the nipple at the top, and next through the eye of the needle. The shuttles are wound in the same manner as described for Messrs. Thomas's machine, except that the winder requires no band, as it is fixed upon the machine table, and when the driving band of the machine is removed, is propelled by friction of the driving wheel acting against the winding pulley when the reel is placed in.

The reel being wound fix it in the horizontal spring, then take the end of the thread and pass it through the wide opening at the side of the shuttle, and from thence through as many of the holes as the tension may require; then place the shuttle in the race, turn the wheel gently, and when the shuttle has passed through the loop pull the top cotton, bringing the loop through the needle hole, and lay both ends of the threads through under the foot of the machine. To commence sewing, after the above process, raise the foot by means of the latch or small lever at the top, place the work under, relieve the foot, and turn the machine from you, start it with the right hand, moving the driving wheel on the treadle, then, when in motion, proceed with the treadle.

The shuttle is formed slightly curved, as the segment of a large circle, to fit the circular race; the needle is a straight one and capable of doing light and heavy work by simply changing the size of the needle. The stitch is regulated by

a brass screw directly under the table and close towards you on the left hand side; to lessen the side stitch screw from you, which contracts the action of the feeder; to lengthen it screw the reverse way; a lock nut holds it secure when properly adjusted.

They are well made and well got up, and will, eventually, make a large appearance among the trades using Sewing Machines.

The "Grover Baker" Machine is to be obtained direct from New York, or from their London agents, Messrs. Newton Wilson & Co., High Holborn.

Messrs. Newton Wilson also have a machine of their own patented, known as the "Boudoir Machine." This is a very elegant little article, the small sizes occupying so little working room that they might be covered with a boy's hat. They are got up principally for family use, as the name implies, and the elegance and taste displayed in their embellishment fully justifies that name. Some of them are really works of art and an ornament to a ladies' boudoir.

The needle-slide is straight, as in Messrs. Thomas's machine, the feeder is precisely upon the principle of Messrs. Thomas's (leg feeding from above), for which, I believe, Messrs. Newton & Co. pay to Messrs. Thomas a license. The thread passes from the reel at the back, through a very capital tension, made by two pieces of India rubber acted upon by a spring, the cotton passing between the India rubber; this tension assimilates very closely to the tension that would be caused by holding the cotton and allowing it

to pass tightly through the fingers; the thread then passes through the nipple at the top and through the eye of the needle.

The under stitch is produced by a straight needle forming a right angle with the holder; the reel of thread supplying this stitch is fixed upon a spindle at the left hand side of the machine when turned up on its hinges, and may be governed by the same tension as described for the top spool; from this spool the thread passes through a piece of wire which guides it to the needle. When the upper needle descends, forming a loop, the under needle passes through it and turns and binds it, the loop being eased off by a hook at the end of a small lever, when the needle rises and the stitch is completed.

The size of the stitch is regulated by a small screw acting upon the leg of the machine, and situated directly opposite the operator in front.

For simplicity of detail this machine is a wonder; turn it up by the hinges to look at the machinery and there appears the small lever, the needle, and the reel of cotton! Binding and trimming apparatus may be fixed to these machines, and the simplicity of their structure must recommend them to those persons who are desirous of seeing a Sewing Machine do the home work. The prices of these machines range from £5. 5s. (a single-thread machine) to £20; but a machine at ten pounds is as good for working purposes as the high priced article, the difference being in the style of finish.

The next machine that passes under my notice is the

"Lancashire," a very strong and useful machine, and one much used in the woollen districts; it is also used by boot-makers and tailors for heavy and strong work. The needle slide works perpendicularly and is enclosed as in Grover's shuttle machine, the action of the slide being similar in both machines; the slide is propelled by cam motion. The needle is a straight one and, passing through the needle plate, forms a triangular loop; the needle then rises about the sixteenth of an inch, producing a slack, and altering the shape of the loop from a tight acute angle to an oval; the under thread is fixed upon a reel and passes through a piece of wire which guides it to the circular needle situated under the needle hole; the loop is then locked by the circular needle, the top needle rises, and the stitch is drawn tight. This machine forms a tambour stitch or chain upon the reverse side of the material which is elastic and strong. The machine is worked by a treadle, and is capable of being driven at a good speed. The tension is produced on the top thread by screws acting on the spindle upon which the spool is placed; the thread is carried by a piece of wire through a small hole in the perpendicular above the front of the machine, down the needle slide, and through the needle. The propulsion of the material in process of sewing is produced by an underneath movement, the rasp-like surface, visible under the foot, being worked by a small cog wheel moving a parallel frame horizontally—a very clever and ingenious method. A cover or foot fits this feeder from above, which, with a slight pressure holds the work secure and assists in the feeding; through this cover

the needle passes before going down the needle hole. The needle slide is marked for setting the needle; the under needle should not be removed, as there is no necessity for it, unless to put in a fresh needle.

This machine is very simple for work, and is very largely used for binding; it is also extensively used in stay work, preponderating, probably, over any other used in that business; it is very strong, and with careful usage would last a lifetime.

During some lengthened experience in every description of Sewing Machine used for manufacturing purposes, I am of opinion that half the annoyances employers are subjected to at starting the machines, is occasioned by the meddling propensities of the work people. I have known girls (who probably knew as much of Sewing Machines as of the science of astronomy) pull a machine to pieces and actually file the parts! thus destroying more value in ten minutes than a month's labour would compensate for. The machine, coming from a respectable firm, is generally well made, and requires no "improvement" (?) from the maker. The machine can be kept clean without being taken bit to bit; a machine employed upon a close fabric, such as linen, calico, &c., does not require taking to pieces more than once in two months, as it can be kept clean without. Upon a soft woollen it will require cleaning often, as the nap passes down the needle hole and clogs the machinery beneath; in the majority of machines this can be remedied without taking them to pieces.

I would advise employers not to allow hands to file or alter any part of a machine without first making application to them or some person capable of passing an opinion and possessing sufficient knowledge of it to warrant such a course without endangering the machinery.

Should an irregularity appear, always consider well the cause before proceeding to any alteration. The Sewing Machine to some people is a terror when out of repair: they are generally of the class that tries this or that remedy, when, at the commencement of the alterations, it is but slightly out of gear, but by the time the remedies are exhausted the machine, in all probability, will require a thorough repair; and this is entirely to be attributed to a want of consideration as to the cause when the effect was before them.

All the tools requisite in a work room are a pair of plyers and a screw driver, for fixing the needles, also a little flour of emery and an oil can: keep files, hammers, &c., out of the way and debar their use; I advise this as a general rule. I have known females very clever in keeping Sewing Machines in repair, but this was effected rather with judicious management in alterations, than by the use of tools, and such persons would, if consulted, warn the employer against the meddling propensities of the work hands.

The Lancashire Machine keeps in order, with careful usage, a great length of time, from its strength and simplicity of arrangement, but, should inaccuracies occur in the working, the same remarks regarding tension, &c., explained in the previous machines will hold good also in this machine.

It would simply be repeating the observations in nearly the same words to go over the ground again, which is quite unnecessary, and would only answer the purpose of book making, and such is not my intention, as this work will not be perused for amusement, like a novel in three volumes, but by business people seeking remedies or requiring instruction in the use of the Sewing Machine, which I endeavour to give as plainly and briefly as possible.

I now turn to a Sewing Machine very extensively and widely circulated through the United States and South America—the machine of Messrs. Singer. According to Messrs. Singer's circular, they possess unparalleled conveniences for manufacturing Sewing Machines, and the numbers they make are so immense, that I shrink from giving them, and must refer the reader to Messrs. Singer's circular or gazette.

These machines are very beautifully made and fit with a marvellous exactness, and are very elaborate and unique in finish. Messrs. Singer profess to have been presented with no less than eighteen prize medals from the different States in Europe. These machines are manufactured in New York, and we must certainly give brother Jonathan credit for very great ingenuity and skill in this particular branch of machinery, as they will undoubtedly bear comparison with the machines manufactured by any other nation.

This is a shuttle machine and produces work alike on both sides; it works rapidly, and is much used in the boot trade. It is also well adapted for heavy work of every description.

A simple method is used in this machine to prevent the needle heating upon hard glazed substances, whenever it is driven at great speed. A sort of cup 'or ladle is used containing a drying oil—boiled linseed—which oils the thread as it is used, and, from the peculiar properties of the oil, it dries and leaves no traces upon the silk: this is very useful in stitching saddlery, the peaks of caps, or any hard glazed substances of any description.

I will now attempt to give instructions to the learner for working this machine. The treadle is fixed evenly, upon a cross-piece of iron, giving equal leverage to toe and heel, by which it is trod alternately, as in Wheeler Wilson's and Grover Baker's machines. Learn to tread this evenly, turning from you, and acquire the power of stopping the machine quickly, as though you were going to turn a corner. In starting the machine, the balance wheel should be turned towards you; the machine can be stopped pretty readily by the treadle, without the use of the hand to this wheel, when the operator has had practice. To thread the needle, which is a straight one fixed in a slide working perpendicularly, bring the thread from the spool through the loop at the end of the check spring lever, through the check spring, then place the two points of the thread—the one rising to the check spring from the tension, and the other coming down from the check spring to the needle—into the hook at the bottom of the wire on the face plate. The thread is then straight upon the surface of the wire tension, and must now be carried through the eye of the needle clamp and through

the needle. When this operation is concluded, thread the shuttle in the following manner:—Place the shuttle reel in the shuttle, carry the thread through the hole at the stern end of the shuttle, and through as many holes as required for the necessary tension, but always finishing through the hole, on the side farthest from the needle. The shuttle thread generally requires a good tension, or the stitch shews up “running”—that is, the under thread, from the looseness of the tension, is drawn through the material and shews upon the surface—entirely destroying the appearance of the stitch. Be careful to place the reel properly in the shuttle; the best method is to place the end of the reel in the stern end of the shuttle and then to latch it, first pressing it down. To be satisfied that it is properly placed, pull off some of the thread and see that it comes off regularly without jumping, which would destroy the effects of the tension, and is often produced by the reels being badly wound; it is desirable that the thread should be wound on as evenly as possible, layer upon layer.

The shuttle thread arranged in the shuttle, place the shuttle in the machine, and draw the shuttle thread through the needle hole, and then place the two threads, top and bottom, under the foot pressing upon the feeder. To accomplish this, when the shuttle is placed turn the machine gently round, the needle then descends, and the shuttle moves forward and penetrates the loop; when this is accomplished the needle rises, bearing the shuttle thread on the top thread, then pull the top thread and lay them both under the foot.

The operator must next proceed to raise the foot, and this should always be done when the needle is up; then place the work to be sewn in the required position, release the foot, and start the machine, turning the balance wheel towards you. Should the operator require to turn a corner, do so when the needle is down, as any angle can then be easily effected. To remove the work from the machine when sewn, or when the shuttle thread is exhausted, or either of the threads broken, draw two or three inches of thread off the top reel, catching hold of it just this side the tension; by this means a slack is produced, and the work can then be removed without fear of breaking the needle.

To fix the needle, remove the shuttle and place the needle bar in juxtaposition with the latch, then secure the needle bar or slide with the latch, next place the needle at the bottom of the needle slide under the clamp that secures it, keeping the long groove always towards the clamp, and finish by arranging the eye of the needle level with the needle hole in the plate leading down to the shuttle race; when this is accomplished, secure the needle by tightening, equally with each screw, the clam that grasps the needle, and secure it firmly. The shuttle should then be replaced and the balance wheel of the machine gently moved; the needle, to be correctly fixed, should be the thickness of the thread used distant from the shuttle; if not, bend it to the required position by working the finger up and down it gently.

The necessary pressure upon the foot to assist the feeder in the propulsion of the material is governed by a nut acting

upon a spiral spring, very similar to Wheeler Wilson's arrangement; a thin fabric will require less pressure than a thick one, and this is a very useful contrivance for modifying the pressure upon the material.

Facing the operator, under the table to the left of the machine, the operator will perceive a pair of large nuts; these nuts regulate or govern the size of the stitch. When the operator has succeeded in producing a stitch the necessary size, let her screw the nut nearest her tightly, which locks them and prevents the size of the stitch varying from the shifting of the screw; this is likely to occur from vibration or other causes. The stitch must not be lengthened to such an extent as to allow the nuts to come in contact with the covered piece of iron, so as to prevent its returning each stitch against the hanger; the effect of this would soon be apparent by the irregular work produced.

To wind the small shuttle reels, fix them in the spooler, place a small cord or piece of elastic round the brass pulley, and from thence round the balance wheel of the machine. This cord must be removed when the machine is at work.

And now comes the great difficulty with all novices in Sewing Machine work—tension. It is neglect of this that produces unsound work, such as cutting, missing, running, looping, and other effects, all from the same cause. No matter what machine it is, or how strong and powerful the work may be, a want of attention to the arrangement of the stress upon the threads produces work that can be pulled out easily. On the other hand too heavy a tension is likely to

cut the work and produce irregular and unsightly stitching.

In Thomas's, Singer's, or any other shuttle machine, loosening the top thread produces a plump beady stitch upon the surface, but if this is carried to excess the effect will be looping on the reverse side of the material. In stitching canvass, cloth, leather, woollen goods, or any tolerably stout material, arrange the tension either by loosening the shuttle or tightening the top tension until a seam is produced alike on each side; upon thin goods, such as linens, &c., the shuttle or under stitch will not appear so plain or prominent as the upper stitch; the tension, however, may be arranged so as to produce a tight stitch beneath and a plump slightly stitch above.

A needle guide for Singer's machines, when working upon light goods—that obviates the vibration of the needle, which may have a tendency to produce irregularity in stitching straight lines rapidly—is produced in the following manner: A small piece of polished steel is used which is fixed just above the foot; the groove in this piece of steel is so arranged by means of a set screw as to press gently against the needle, thus insuring steadiness in its action, and preventing the possibility of irregularity from this cause.

These machines require well oiling, and attention must be paid that the shuttle race is kept clean and oiled occasionally; oil all those parts that work together to ease the friction.

Two check springs are sent out with each machine, one stronger than the other for work of a heavier description;

they may be easily arranged in either of the holes made to receive them, the one to the left producing the heaviest tension. Hemming guides, binders, &c., may be fixed to these machines, and may be obtained with the machines at Messrs. Singer & Co's, 65, Buchanan Street, Glasgow, or of A. Wilson, 28, Cornhill, London. The needles for these machines may also be obtained at the same establishments.

The British Machine is a good working machine and much resembles Wheeler Wilson's machine; it is peculiarly suited to light descriptions of work; it will stitch rapidly and with precision, and the price is so low that it is placed within the reach of the majority of the working population, more especially that class working for city houses upon various light goods.

The stitch produced by this machine is straight and slightly, and the treadle is worked as Wheeler's or Singer's, a cross piece working upon a bar, toe and heel.

The top cotton is conveyed from the spool at the back through the tension; from thence through the top at the needle arm to the needle; the needle in descending is met by a latchet shaped hook, which is supplied by a steel spool held in its position by a rest; the thread from this spool is brought up under the needle plate and the two threads are held when commencing work.

Although this machine differs in some particulars from Wheeler Wilson's, yet the instructions given for that machine will do equally well for the learner in this; indeed it would be but a recapitulation of those instructions; I therefore

ask the reader who requires information to turn to those instructions.

These machines are well made, and are turned out in a superior manner, with a stand and portable table complete; they may be obtained of Mr. Hagen, the London agent, 84, Cheapside.

I have now given, to the best of my judgment, a fair description of those Sewing Machines I have attempted to explain, and my aim has been to familiarize them to the reader as much as possible, my particular desire being to enlighten those parties in possession of one machine or more by way of experiment. To those persons I have invariably aimed at giving a lucid and clear description of the machines in general use, their capabilities, and simple directions for working them. I by no means pretend that the Sewing Machine should be learned from this book, I am of opinion that a practical teaching is the one most easily acquired, and enables the learner to understand more fully the manipulation of the machine than any written work or directions. Still there are parties situated in remote localities who do not possess the opportunity or advantage of having the machine taught them practically. To such persons I presume this work will be an assistance; with care and a little study they may derive a good knowledge from the instructions I have given. The Sewing Machine is not difficult either to learn or work, but it rather requires care and practice. I have known hands turn out tolerably good work with a week's practice. There are more difficult descriptions of work

which require a longer application, such as cording, &c., which can only be well executed by experienced hands.

The explanations I have given previously, as to the elasticity of the various materials used with the Sewing Machine, should be well borne in mind. A soft-finish thread, cotton, or silk, is the best material for a shuttle machine. Wheeler Wilson's and the British work well with a glazed cotton; but soft-finished material should invariably be used upon elastic material, or upon any work requiring a great strain upon it.

It would not be right, in this treatise, to give names of persons supposed to supply the best material for the machine; there is, however, very little difference in them, and I may say that they are all generally good. Indeed it would be no use to supply manufacturers with an inferior article, which would be discovered in using the first package. It is a different case with articles for domestic or the shipping trade, where they probably never hear of the goods after leaving the warehouses; but manufacturers cannot be supplied with anything but a *bona fide* article.

I now take leave of my readers, and hope that my acquaintance may prove advantageous to them. If I have only given one explanation suited to the requirement, it will repay them for the trouble of perusing this volumn of *multum in parvo*. I could have drawn these instructions, &c., to an almost indefinite length, but my object was to give as terse a description as possible in the smallest amount of space. To